CLAIMS

1. Isolated pluripotent adult stem cells obtained from exocrine glandular tissue.

2. Pluripotent adult stem cells according to Claim 1, characterized in that the exocrine glandular tissue originates from a vertebrate, preferably a mammal.

3. Pluripotent adult stem cells according to Claim 2, characterized in that the exocrine glandular tissue originates from a primate, in particular, a human.

4. Pluripotent adult stem cells according to one of Claims 1 to 3, characterized in that the exocrine glandular tissue is derived from a salivary gland, lacrimal gland, sudoriferous gland, sebaceous gland or from gastrointestinal tissue, including the pancreas.

5. Pluripotent adult stem cells according to one of Claims 1 to 4, characterized in that the exocrine glandular tissue is acinar tissue.

6. Pluripotent adult stem cells according to Claim 5, characterized in that the acinar tissue is derived from the pancreas, the parotid gland or the mandibylar gland.

7. Pluripotent adult stem cells according to one of Claims 1 to 6, characterized in that they are capable to form organoid bodies.

8. Pluripotent adult stem cells according to one of Claims 1 to 7, characterized in that they are capable of differentiating into cell types of all three germ layers in a culture medium that does not contain any additional growth factors or differentiation factors after

culturing under spatial conditions which ensure three-dimensional contact of the cells.

9. Pluripotent adult stem cells according to one of Claims 1 to 8, characterized in that even after freezing/ cryopreservation the cells still retain their ability for self-renewal and unlimited division and do not differentiate.

10. A stem cell culture comprising the stem cells according to one of Claims 1 to 9 in a culture medium which allows stable maintainance and proliferation of the cells essentially without differentiation.

11. The stem cell culture according to Claim 10, characterized in that the culture medium does not include any feeder cell layer.

12. The stem cell culture according to Claim 10 or 11, characterized in that the cells retain their ability for self-renewal and unlimited division for more than 25 passages.

13. The stem cell culture according to Claim 12, characterized in that the cells retain their ability for self-renewal and unlimited division for more than 50 passages, preferably more than 100.

14. Primary stem cell culture obtained from exocrine glandular tissue, characterized in that the majority of the living cells present in the culture are undifferentiated pluripotent adult stem cells.

15. Organoid bodies formed from the stem cells according to one of Claims 1 to 9 and obtainable by culturing these stem cells under spatial conditions that ensure three-dimensional contact of the cells.

16. The organoid bodies according to Claim 15 obtainable by culturing the stem cells in hanging drops, moving suspension culture or surface culture on surfaces to which the cells have little or no adhesion.

17. The organoid bodies according to Claim 15 or 16, characterized in that the cells of these organoid bodies essentially retain their viability and their capacity for differentiation after freezing/cryopreservation.

18. Secondary organoid bodies obtainable from the organoid bodies according to one of Claims 15 to 17 by spontaneous growth in surface culture on surfaces without limited surface adhesion.

19. A method of producing adult pluripotent stem cells according to one of Claims 1 to 9, characterized in that
exocrine glandular tissue is removed,
the tissue thus removed is divided,
the divided tissue is cultured and
the cells persisting in the culture are cultured.

20. The method according to Claim 19, characterized in that the tissue is divided in such a gentle way that the cell structures in the resulting tissue fragments are largely preserved and the divided tissue is first cultured under suitable conditions in tissue culture vessels, whereby most of the differentiated cells rapidly die in the course of a few days and become detached from the stem cells, whereupon the stem cells adhere on the bottom of the tissue culture vessel, and the remaining tissue and nonadherent differentiated cells are largely separated by a first change of medium and the remaining nonadherent cells are separated by additional changes of medium at intervals of a few days, preferably about 2 to 3 days.

21. A method of producing differentiated cells from the stem cells according to one of Claims 1 to 9, characterized in that the undifferentiated stem cells are cultured further under spatial conditions which ensure three-dimensional contact of the cells until organoid bodies are formed, said organoid bodies then being transferred to a suspension culture where they are cultured further.

22. A method of producing differentiated cells from the stem cells according to one of Claims 1 to 9, characterized in that the undifferentiated stem cells are transferred to a differentiation medium and are cultured further under spatial conditions which ensure a three-dimensional contact of the cells until forming organoid bodies which are transferred to a surface culture after which secondary organoid bodies having the same properties as the primary organoid bodies are then formed in the surface culture from out-growing individual cells of these organoid bodies which then can be cultured further.

23. The method according to Claim 21 or 22, characterized in that the culturing is performed under spatial conditions which ensure three-dimensional contact of the cells, culturing in hanging drops, moving suspension culture or surface culture on surfaces to which the cells have little or no adhesion.

24. Differentiated cells obtainable from the stem cells according to one of Claims 1 to 9 by the method according to one of Claims 21 to 23.

25. Differentiated cells according to Claim 24, characterized in that they are bone cells, e.g., osteoblasts, osteoclasts, chondrocytes, adipocytes, fibroblasts, e.g., skin and tendon fibroblasts, muscle cells, endothelial cells, epithelial cells,

hematopoietic cells, sensory cells, endocrine and exocrine glandular cells, glial cells, neural cells, oligodendrocytes, blood cells, intestinal cells, heart, lung, liver, kidney or pancreas cells.

26. A differentiation culture comprising the differentiated cells according to one of Claims 24 to 25 and/or the organoid bodies according to one of Claims 15 to 18 in a differentiation medium.

27. The differentiation culture according to Claim 26, characterized in that the differentiation medium does not include any additional growth factors or differentiation factors.

28. A method of treating an injury or a disease condition comprising administration of a therapeutically effective amount of the stem cells according to one of Claims 1 to 9 or the differentiated cells according to one of Claims 24 to 25 to an individual or extracorporeal contacting of the stem cells or differentiated cells derived from them with a body fluid of the individual and then returning the body fluid to the individual.

29. The method according to Claim 28, characterized in that the stem cells are derived from autologous tissue of the individual.

30. The method according to Claim 28 or 29, characterized in that the stem cells are introduced into the body of the individual where they differentiate in vivo to take over the function of a missing or damaged organ, tissue type or cell type.

31. The method according to one of Claims 28 to 30, characterized in that the treatment restores or strengthens the individual's immune system.

32. The method according to one of Claims 28 to 31, characterized in that the stem cells serve as a vehicle for a therapeutic agent.

33. The method according to Claim 32, characterized in that the therapeutic agent is DNA, RNA, a protein, a peptide or a low-molecular pharmaceutical drug.

34. The method according to one of Claims 28 to 33, characterized in that it is a gene therapy method.

35. The method according to one of Claims 28 to 34, characterized in that the stem cells are genetically engineered to have certain properties.

36. The method according to one of Claims 28 to 35, characterized in that the stem cells are administered together with a physiologically acceptable matrix or a physiologically acceptable vehicle.

37. The method according to one of Claims 28 to 36, characterized in that the stem cells are administered by local injection, systemic injection, parenteral administration, oral administration or intrauterine injection into an embryo.

38. The method according to one of Claims 28 to 37, characterized in that the disease state to be treated is a tumor, a liver disease, a connective tissue disease, a cardiovascular disease, a neurodegenerative disease, a metabolic disease, an autoimmune disease, anemia, hemophilia, diabetes, ischemia, an inflammation, an infectious disease, an aging process, a genetic defect or a transplant rejection.

39. A use of the stem cells according to one of Claims 1 to 9, stem cell cultures according to one of Claims 10 to

13 or the organoid bodies according to one of Claims 15 to 18 or differentiated cells derived from them for developing tissue-like or organ-like multicellular systems in vitro.

40. The use according to Claim 39, characterized in that the multicellular systems comprise several types of cells.

41. A use of the stem cells according to one of Claims 1 to 9 or differentiated cells obtained therefrom for reproductive cloning of a nonhuman organism.

42. A use of cells according to one of Claims 1 to 9, stem cell cultures according to one of Claims 10 to 13 or organoid bodies according to one of Claims 15 to 18 or differentiated cells derived therefrom as an in vitro system for testing chemicals, in particular for screening pharmaceutical drugs.

43. A use of the differentiated cells according to Claims 24 to 25 or the differentiation culture according to Claim 26 to 27 or multicellular systems obtained therefrom for production of desired substances in vitro.

44. A pharmaceutical composition comprising the stem cells according to one of Claims 1 to 9 or differentiated cells obtained therefrom as well as a physiologically acceptable matrix or a physiologically acceptable vehicle.

45. The pharmaceutical composition according to Claim 44 also comprising additional excipients or active ingredients.

46. A kit comprising the stem cells according to one of Claims 1 to 9 or the differentiated cells derived

therefrom or the pharmaceutical composition according to Claim 44 or 45.

47. The kit according to Claim 46 comprising additional excipients or reagents, e.g., reagents for culturing the cells or diagnostic reagents.